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THE USE AND ABUSE OF  
ATHLETICS.

BY  
ROBERT E. COUGHLIN, M.D.,  
BROOKLYN, N. Y.

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Reprint from the MEDICAL RECORD,  
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## THE USE AND ABUSE OF ATHLETICS.

BY ROBERT E. COUGHLIN, M.D.,

BROOKLYN, N. Y.

THE history of athletics has blended intimately with medicine, and feats of agility and endurance have at all times excited the interest and investigation of capable and reputable physicians, for they are in every sense of the word examples of physiological and functional anomalies. The word athletics was derived from the Greek *athletæ* which was the designation of persons among the Greeks and Romans who contended for prizes in public games. This was prior to 400 B. C. The system was purely Greek, as were the athletes, although the Romans admired physical skill and strength. No institution exercised a greater influence on molding the national character, and producing that unique type of physical and intellectual beauty which we see reflected in Greek art and literature than the public contests of Greece.

The earliest games of which we have any record are those at the funeral of Patuclus. The belief that the dead would be gratified by the same exhibitions which pleased them in life was a common heritage of the Greeks and Romans from their Aryan progenitors. The competitions were chariot racing, archery, boxing, wrestling, and putting the weight.

In 776 B. C. the Elerians engraved the name of Coræbus as victor in a foot race. This is the earliest record of any contest. Ten months was what all the athletes swore to having taken in preparation for the games at Olympia. Herodicies, who lived 500 B. C., was the founder of medical gymnastics.

The different phases of athletics might be designated as follows:<sup>1</sup> (1) Games and sports that depend

wholly or partly on feats of physical strength, such as baseball, cricket, rowing, and swimming. (2) In a restricted sense, feats of strength performed for their own sake, and not as an incident of any game, as throwing the hammer, running, leaping, tumbling, etc., especially outdoor feats in which the maintenance of health is not the prime object. (3) Any system of physical training by gymnastic exercises and outdoor sports.

The physiology of exercise may be epitomized as follows: It increases the action of the heart, causing the blood to flow more freely through the circulation; it increases the rapidity of respiration; dilates the capillaries; increases the activity of the glandular secretions; causes diaphoresis, and incites all the internal organs to act more energetically. It is well to note that exercise calls into play the involuntary as well as the voluntary muscles and that chemical changes are going on in consequence.

Jäger<sup>2</sup> says that gymnastic exercise is most important for the proper development of the muscles and motor power, and ought to be commenced in both sexes at an early age. Systematic muscular activity increases the volume of the muscles and enables them to do more work. The amount of blood is increased with increase in muscular development, while at the same time the bones and ligaments become more resistant. As the circulation is more active in an active muscle, gymnastics favors the circulation. An active muscle also uses more oxygen and produces more carbonic oxide, so that respiration is also excited. The total increase of the metabolism gives rise to the feeling of well-being and vigor, diminishes abnormal irritability, and dispels the tendency to fatigue. The whole body becomes firmer and specifically heavier.

All exercises used in medicine are based on Ling's or the Swedish system, which consists of systematic



attempts made to strengthen certain weak muscles, or groups of muscles, whose weakness might lead to the production of deformities. These muscles are exercised systematically by opposing to them resistances, which either must be overcome, or against which the patient must strive by muscular action.

Holmes<sup>3</sup> presents the following as a summary of his paper entitled "The Capacity of Human Muscle for Work": (1) A muscle working under normal physiological conditions is neither "loaded" nor "after-loaded." (2) A muscle will not contract isotonically nor isometrically under normal physiological conditions. (3) When an ergograph is used, a large part of the energy expended by the muscle during a period of work is lost; this loss occurs in easing back the weight or the spring to its position of rest or to the zero point. (4) A recognition of the conditions under which a muscle works and of the end to be attained is necessary when an interpretation of ergographic results is to be made. (5) A normal muscular contraction consists in contraction, relaxation without load, rest. (6) A muscle can work over periods of long duration without fatigue when the conditions are favorable. (7) These experiments confirm the conclusion stated by Maggiora that there is a definite weight with which one can perform the greatest possible work. (8) The physiological limit of a muscle for continuous work is modified by the rate, load, and interval or by rest and work.

*Physical Overexertion and Its Effects on Health.*—John Knott<sup>4</sup> emphasizes the fact that exercise, in order to do good, must be indulged in with moderation. In analyzing the effects of exercise he says that in an active muscle nutritive changes take place far more rapidly and on a larger scale than in a resting one. The waste products are carried off in larger quantities and new materials are absorbed with greater rapidity. Again, muscle forms so large a

proportion of the mass of the body that it is known as the great furnace of the animal economy, about four-fifths of the total heat of the system being involved within it. It is most important to maintain a healthy functional activity of the muscular system. With the increase of the muscular action the amount of waste products is also increased. Up to a certain point the system is able to eliminate this waste, but in overexertion a point is reached beyond which the effete products begin to accumulate in the circulation and in the tissues. Fatigue then becomes manifest.

When the muscular fatigue is carried to excess, the healthy nutrition of the other organs and tissues can no longer be maintained. This condition has a special effect on the nerve centers. When the nutrition of the latter becomes deranged, the nutritional changes and functional capacities of the whole system are disturbed. In the excessive muscular exertion which takes place in running the "brain is overcome by a kind of drunkenness." He believes that the fever of overexertion is due to the poisoning of the nerve centers by the muscular waste products. The heat regulating centers lose their governing powers and the body wastes with slow fever. There are various local affections which are likely to be produced by excessive exercise, such as hypertrophy and dilatation of the heart, aneurysm, and varicose veins. It is necessary for even those who have been blessed with an unusual physique to remember that the overuse of the body may lead to a sudden and permanent breakdown of health.

Violent or prolonged exertion often induces temporary albuminuria. Casts<sup>5</sup> have been found in the urine after a boxing bout when examinations at other times showed nothing abnormal.

Overexertion produces mental fatigue, as many athletes will acknowledge. One instance may be cited in which an individual after a long bicycle ride



could not remember his companion's name though he knew him intimately. This condition is probably the result of an interference in the blood pressure.

Recently there appeared in the obituary column of one of our medical journals the death notices of two physicians who had in their college days excelled in athletics, one at football playing and the other at rowing. The former died of appendicitis and the latter, as the notice read, "of an attack of pneumonia which his weak heart was unable to withstand owing to former hard athletic work in college." Within the past few months the deaths of several noted athletes have been recorded, all occasioned by renal and cardiac disease. One of these was a young woman in twenty-three, who excelled as a swimmer.

A recent writer<sup>6</sup> of an article on "Neurasthenia," in speaking of the etiology of this condition, says: "To the mental training there has also to be added the schoolmaster's craze for athletic development, often carried far beyond the physical strength of the growing boy or girl, and again leading to a depletion of the reserves of energy, which bodes ill for the future capital account of those who, in youth, are compelled to give such hostages to the fortune of their vitality."

In the year 1903 there were thirty-five deaths from football, 500 severe injuries, and sixteen cases of spinal injuries followed by paralysis. Of the 343 fractures, most of them were of the bones of the leg and forearm, ninety-one of the clavicle, nineteen of the femur, and four of the skull. In commenting on these fatalities and injuries, the *Journal of the American Medical Association*<sup>7</sup> says: "The vital question is, does the gain in college pride and college spirit sufficiently outweigh this list of human wreckage?" Dr. Lawrence Johnson has said that a young man in a well-contested rowing race, lasting twenty-five minutes, would use up as much energy as he would

actually require ordinarily in a lifetime of eighty years.

An experienced athlete, in a recent conversation with the writer, gave as his opinion that a man sacrifices a certain number of years of his life every time he enters a contest of any kind. He also said that a man when "fit," as expressed by athletes, is in an abnormally nervous condition. In other words, he can never remain at ease for a minute at a time, and like the caged lion is forever on the move during his waking moments. It has been noticed by observers that athletes are often sickly and particularly susceptible to constipation and appendicitis. A case has been related in which a strong man, although sick with phthisis pulmonalis, performed his feats of strength up to a short time preceding his death.

It has been said that the muscles of old athletes are prone to degeneration unless, as is rarely the case, exercise is continued. Cardiac hypertrophy is so commonly found in athletes that the condition has been named "athlete's heart." Like all hypertrophied muscle tissue it is susceptible to degeneration in the same manner as the blacksmith's right arm.

Records kept in gymnasiums show that when a muscle has been hypertrophied by exercise in a short period of time, and the exercise has then been discontinued, the measurement very soon drops back to the original figure. The writer has tried this experiment in two cases with the same result. The changes that go on in the muscle of the pregnant uterus and the tendency of the same toward degeneration when the vital powers of the individual begin to wane are an instance of the great susceptibility of hypertrophied muscle to degenerate.

Valvular murmurs are frequently found in athletes and there can be no doubt that the preceding hypertrophy was an etiological factor in these cases. The



writer has in mind at the present time a case in line with the foregoing in which a boy of twelve developed a well-marked murmur after a few weeks' over-exertion in riding the wheel.

It is a disputed question whether athletics can cause renal disease. The presence of albumin and casts in the urine upon exertion or overexertion would lead one to believe that renal disease might be the ultimate result, inasmuch as nearly all authorities agree that albuminuria is never physiological. One case occurred in the experience of the writer in which persistent albuminuria was present in a young man of marked athletic tendencies who later developed pulmonary tuberculosis which caused his death after an illness of a few months. In this particular case the family history was negative.

Another case may be cited of a young man who as an amateur sprinter won contests and medals galore. It was a well-known fact that he always fainted as he broke the tape. He is now going through life with a damaged heart as a result of this severe athletic work. Sudden deaths have occurred while wheeling, dancing, wrestling, boxing, running, rowing, lifting heavy weights, and bowling.

It has often been said that many athletes are sexual perverts, and investigation reveals the fact that there are good grounds for such statements. We might explain this condition by stating that severe athletic training and muscle building are at the expense of the nervous and glandular systems.

A few years ago the writer's attention was called to a professional gymnast possessing great strength who was practically impotent. It has been observed by a few that the best athletes possess poorly developed sexual organs. A supposed authority upon matters pertaining to athletics recently made the following statements:<sup>8</sup> "The question of race suicide brings up another point, namely, the effect of severe

athletic training upon the sexual power. Physical culture extremists preach that massive masses of muscle are an indication of 'superb manhood.' Facts fail to bear out this theory, the truth of the matter being that severe physical exertion has exactly the opposite effect. This is true, not only in the case of human beings, but also with any animal. It is a well known fact that the surest way to ruin animals for breeding purposes is to compel them to perform hard work.

We need only to look up the records of America's prominent physical culturists and professional athletes, to be convinced of the truth of the above statements. It will be found that comparatively few athletes marry. Of those that do marry, a small percentage have children. A large percentage are divorced by their wives, and it is doubtless true that not a few completely lose the instinct of the normal man."

*Benefits of Athletics.*—In regard to the benefit derived from athletics one has only to remember the physiology of exercise to become convinced of the fact that exercise *per se* may be very beneficial. The point to bear in mind is to advise the person to stop before fatigue becomes evident. We can do this readily when the athlete is interested in games for the mere exercise, but such advice cannot be offered when his aim is to excel in an athletic contest. Here is where athletics do great harm, and it would be a safe rule to advise against all forms of athletics in the nature of a contest, especially if the person be not in robust health.

Athletics may be said to be beneficial until the heart begins to be markedly hypertrophied; this is the danger signal. A person in such a condition might indulge in light forms of exercise, but should be strongly advised against entering any contest. In the words of President Roosevelt,<sup>9</sup> "Athletic sports



if followed properly are admirable for developing character." Painter<sup>10</sup> says that the elements of noble manhood are a healthy body and a clear intellect. Locke's aim was to give a boy a robust mind in a robust body. "We have overburdened our moral nature," said the Rev. Dr. Percy S. Grant, before the League for Political Education, "We have put too many jobs upon it. Men have to resort to drink, to pleasure, to passion, to relieve their overwrought energies. Good health can do the business, and the direct way to good health is to force young America into camp, gymnasiums, and out-door sports." It would be opportune here to speak of the Japanese as a people among whom athletics have always been popular.<sup>12</sup>

Luther Halsey Gulick<sup>13</sup> calls attention to that class of cases in which the patient is constantly demanding treatment for either real or imagined functional disorders. He says in bicycling alone we do find both the physiologic and psychical conditions adequately met. One of the immediate results of bicycling is a large increase in the respiration. The alternate pressure and relaxation which the diaphragm exerts upon the liver is a factor in promoting the various circulations within that organ. Bicycle riding offers ample diversion and out-of-door air. It provides for exercise of the large muscular masses by a great number of small efforts. It is automatic and so productive of comparatively little fatigue.

Dr. Lucien Howe<sup>14</sup> has said that it is possible to obtain a numerical expression for the general muscular strength of the body. It is also possible to obtain an expression, in terms of a prism, of the strength of the muscles of the eye. The practical application of this knowledge is that, by strengthening the muscles of the body, one could strengthen the muscles of the eye. Dr. E. N. Nash<sup>15</sup> has noted definite and im-

mediate benefit in cases of Bright's disease when patients have played golf as a pastime.

J. W. Dowden<sup>16</sup> says that two factors which greatly conduce to the successful issue of an operation for hernia are the presence of strong abdominal walls and the freedom of these walls from fat. A lax abdomen should be strengthened for a month or more before an operation is undertaken, or if an emergency arise, and an operation has to be performed, exercises ought to be initiated within a week or ten days after the event. The abdomen must be "pulled in" as flat as possible, and this tonic contraction maintained as long as possible. It is astonishing how much can be done in reducing the abdominal girth, especially by the operation of pulling in the abdomen.

Dr. J. Henry Carver<sup>17</sup> claims that faulty metabolism may be restored by proper respiration. In respect to proper respiration and the training of the muscles of respiration, the writer of this paper wishes to state that in his opinion its possibilities in the very young are really remarkable. He has under observation at the present time a child of three years who is able to expand his chest two and one-half inches. These breathing exercises were begun at the age of fourteen months.

Dr. Hermann Weber<sup>18</sup> recently read a paper on "The Prolongation of life" before the Royal College of Physicians (London) in which he said that "regular exercise every day in all weathers, supplemented in many cases by breathing movements, and by walking and climbing tours" are conducive to a long life.

Clifford Allbutt,<sup>19</sup> in a most interesting paper entitled "Rise of Blood Pressure in Later Life," says that "the ordinary man must be warned, as he passes the age of forty, to keep up muscular exercise."

Very full and interesting statistics have been prepared for the *Harvard Graduates' Magazine*<sup>20</sup> by



George L. Meylan of Columbia, controverting the prevalent opinion that college oarsmen die young as a result of the excessive strain of boat-racing. Accurate data were obtained concerning all of Harvard crews between 1852, the year of the first race, and 1892. It was learned that of 152 men who had rowed in the university boat during that period, 123 were living on November 1, 1902. Of those who had died, six were killed in the civil war, two had lost their lives by accident, and others by diseases in no way to be ascribed to college athletics. Two died of heart disease, two of apoplexy, one of phthisis pulmonalis, and one of Bright's disease. That is to say, only six owed their death to causes in any manner traceable to the strain of athletic training.

*Conclusions:*—1. Athletics may be for good or evil and in the same manner as a two-edged sword.

2. The prime object in athletics is improvement of the general health. One writer <sup>21</sup> has said that health, like happiness, does not exist. Each has a goal or limit which, while seemingly attainable, eludes perfect possession. He said the body consists of a number of mechanisms which have the closest and most exact relations, and as they approximate to harmony there is health, but when disordered there is ill health.

3. To obtain good health muscle building is not a necessity. One cannot judge of a person's health by the size and hardness of the muscles. We have seen that the converse may be true.

4. To obtain health one must not be in a perfectly trained condition, owing to the effects of severe training on the nervous system.

5. There is no evidence to prove that athletics and muscle building improve the constitution.

6. One should always keep in mind the fact that built up or hypertrophied muscle has a tendency to

degenerate. The heart being a muscular organ shares in this tendency.

7. In regard to the moral side of the question it remains to be proven that athletics *per se* corrupt the morals. Dr. F. R. Sturgis is confident that athletics improve the morals of a community. He has seen cases of masturbation cured by athletics.<sup>22</sup>

8. Although the evidence for and against athletics is contradictory, the whole subject may be summed up by stating that athletics are beneficial when properly and judiciously applied and very injurious when the precautions, above mentioned, are ignored or carelessly regarded.

#### BIBLIOGRAPHY.

1. Standard Dictionary.
2. Landois and Sterling's Textbook of Human Physiology.
3. J. G. Holmes, "The Capacity of Human Muscle for Work," *Journal of the American Medical Association*, December 19, 1903.
4. John Knott, "Physical Overexertion," *Medical News*, January 30, 1904.
5. Edward G. Janeway, "Discussions," *MEDICAL RECORD*, February 27, 1904, p. 357.
6. Gutrie Rankin, "Neurasthenia," *Medical Examiner and Practitioner*, March, 1904.
7. *Journal of the American Medical Association*, January, 1904.
8. Edgar G. Beall, "The effect of Severe Athletic Training upon the Sexual Power."
9. Writings of Theodore Roosevelt.
10. F. V. N. Painter, "History of Education."
11. Percy S. Grant, "Compulsory Physical Training."
12. *Outing*.
13. Luther Halsey Gulick, "The Bicycle as a Therapeutic Agent." *Boston Medical and Surgical Journal*, January 14, 1904.
14. Proceedings of the American Medical Association, November, 1903.
15. Proceedings of the Chicago Homœopathic Society, February, 1904.
16. J. W. Dowden, "The Rôle of the Abdominal Muscles



in Relation to Hernia." *The Scottish Medical and Surgical Journal*.

17. J. Henry Carver, "Faulty Metabolism Restored by Proper Respiration."

18. Thomas Clifford Allbutt, "Rise of Blood Pressure in Later Life."

20. George L. Meynan, *Harvard Graduates' Magazine*

21. Sir Michael Foster, "Health and Ill-Health."

22. F. R. Sturgis, "Sexual Debility in Man."

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